

# TRANSPERITONEAL LAPAROSCOPIC URETEROLITHOTOMY FOR LARGE DISTAL URETERIC STONE

<sup>1</sup>Priyosantoso, Bacilius Agung; <sup>1</sup>Pramod, Sawkar Vijay.

<sup>1</sup>Department of Urology, Faculty of Medicine/Padjajaran University, Hasan Sadikin General Hospital, Bandung.

## ABSTRACT

**Objective:** This study is aim to share our experience of laparoscopic ureterolithotomy for large distal ureteric stone with transperitoneal approach. **Material & methods:** A 37-year-old male initially diagnosed with right hydronephrosis due to proximal ureterolithiasis and stone at left inferior calyx. The stone migrated to right distal ureter 12 hours prior to surgery, at Hasan Sadikin General Hospital Bandung. The patient were underwent laparoscopic ureterolithotomy with transperitoneal approach. **Results:** We successfully performed laparoscopic ureterolithotomy with transperitoneal approach on a 37 years old male patient who was diagnosed with right hydronephrosis due to distal ureterolithiasis and stone at left inferior calyx. Duration of operation was 45 minutes. The patient was discharged at 2<sup>nd</sup> postoperative day without any complications. **Conclusion:** Transperitoneal laparoscopic ureterolithotomy for distal ureteric stone is a safe and feasible technique that should be an option for every patient who is planning to undergo distal ureterolithotomy especially for large stones.

**Keywords:** Transperitoneal, laparoscopy, distal ureterolithotomy.

## ABSTRAK

**Tujuan:** Penelitian ini bertujuan untuk membagi pengalaman mengenai tindakan laparoskopik ureterolitotomi pada batu ureter distal yang besar melalui pendekatan transperitoneal. **Bahan & cara:** Seorang pria usia 37 tahun didiagnosis awal dengan hidronefrosis kanan yang disebabkan oleh batu ureter proksimal dan batu kaliks inferior kiri, di RSU Hasan Sadikin Bandung. Kemudian pada 12 jam sebelum operasi dilakukan BNO dengan hasil batu migrasi ke ureter distal kanan. Pasien kemudian menjalani operasi laparoskopik ureterolitotomi dengan pendekatan transperitoneal. **Hasil:** Kami telah berhasil melakukan ureterolitotomi laparoskopik transperitoneal pada seorang pria usia 37 tahun dengan diagnosis hidronefrosis kanan yang disebabkan oleh batu ureter distal kanan dan batu kaliks inferior kiri. Durasi operasi ini selama 45 menit. Pasien pulang pada hari kedua tanpa komplikasi. **Simpulan:** Ureterolitotomi laparoskopik transperitoneal pada batu ureter distal merupakan salah satu teknik operasi yang aman dan mudah yang dapat menjadi pilihan manajemen pada setiap pasien yang akan menjalani operasi ureterolitotomi terutama pada batu ureter distal yang besar.

**Kata kunci:** Transperitoneal, laparoscopi, ureterolitotomi distal.

Correspondence: Priyosantoso, Bacilius Agung; c/o: Department of Urology, Faculty of Medicine/Padjadjaran University, Hasan Sadikin General Hospital Bandung. Jl. Pasteur No. 38 Bandung. Office: (022) 2039141. Email: bacilius\_priyosantoso@yahoo.com.

## INTRODUCTION

The treatment of urinary lithiasis has been revolutionized during the last three decades. Laparoscopic surgery provides a higher degree of patient satisfaction than open surgery from a cosmetic perspective. It is also effective in reducing postoperative pain, operative wound complications, blood loss, and the length of hospital stay. Laparoscopy as minimally invasive treatment is continuously gaining place in the

treatment of urinary stones, mainly replacing open surgery.

In most of the published literature, laparoscopic approach for lower ureteric stone is described to be less successful than middle and upper ureter. Upper and mid ureteric stones are safely approached retroperitoneally but lower ureteric stones are better approached transperitoneally. This article describes important technical points for successful retrieval of large lower ureteric stones through transperitoneal laparoscopy.<sup>1-3</sup>

## OBJECTIVE

This study aims to share our experience in laparoscopic ureterolithotomy for large distal ureteric stone with transperitoneal approach.

## MATERIAL & METHOD

A 37-year-old male was admitted to Hasan Sadikin General Hospital with right hydronephrosis due to proximal ureterolithiasis and stone at left inferior calyx. The stone migrated to distal ureter 12 hours prior to surgery. He underwent laparoscopic distal ureterolithotomy with transperitoneal approach. We successfully performed laparoscopic ureterolithotomy

with transperitoneal approach. Duration of operation was 45 minutes. Patient was discharged at 2<sup>nd</sup> postoperative day without complications.

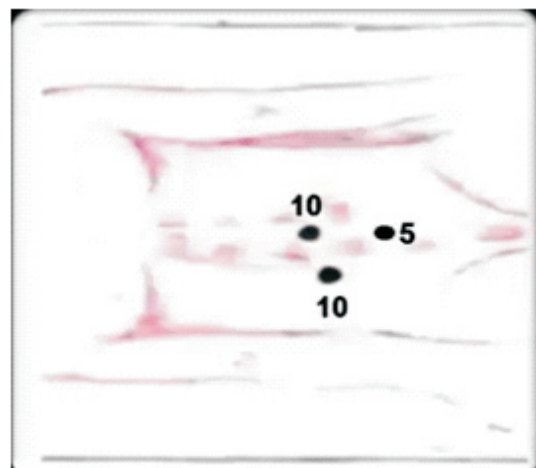
## RESULTS

One patient with right distal ureteric stone of 25 x 9 mm was treated with transperitoneal laparoscopic ureterolithotomy.

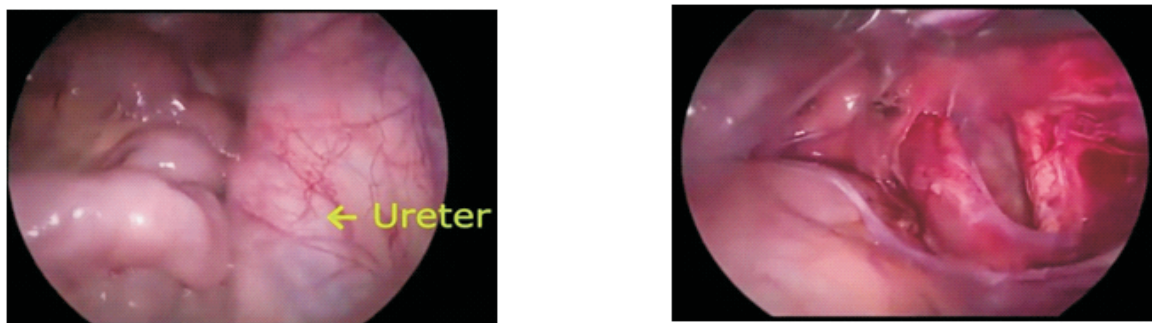
Patient was placed in 30-45° semi trendelenburg position (figure 1). Camera port was placed at the umbilicus with closed technique. Dominant port of 11 mm was inserted under vision in the iliac fossa and the non dominant port of 5 mm at the suprapubic area (figure 2).



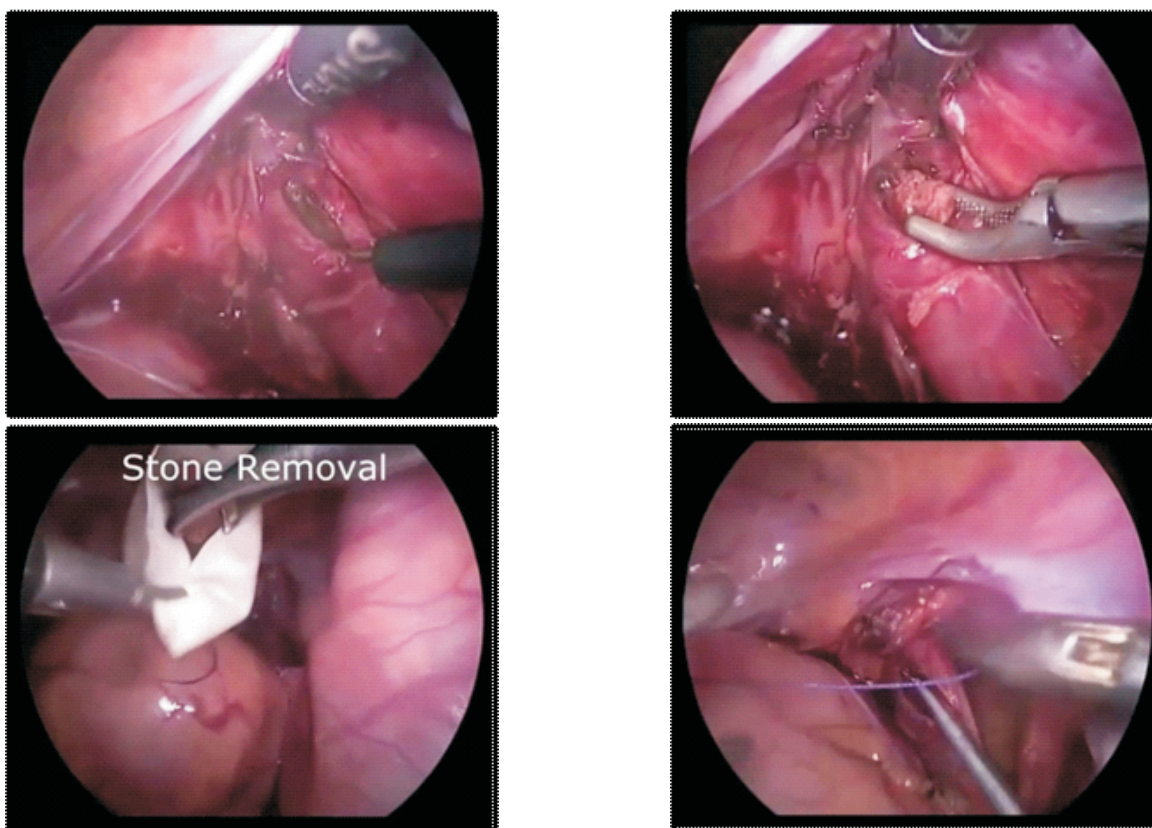
**Figure 1.** Positioning of patient, monitor, and operator.



**Figure 2.** Direction and the scheme of port positions.



**Figure 3.** Anatomical identification: vas deferens, right external iliac artery, and ureter.



**Figure 4.** Incision of the ureter over the stone, extraction of the stone, and suturing of the ureter.

Semi trendelenburg position aided colon migration to cranial and medial direction. We can identify pulsation of the right external iliac vessels and identify the ureter easily on crossing the right external iliac artery. The ureter was then dissected distally staying away from the adventitia until the stone site was reached (figure 3).

Determining position of the stone sometimes becomes challenging. Gentle pinching of the ureter gave exact location of the stone. Using Maryland dissector, a non stone bearing part of the ureter could be pinched fully, but the stone

containing part could not.

Once the stone was localized by 'ureteral pinching', a pointed diathermy hook was used to incise the ureter over the stone. Maryland dissector was used to maneuver the stone with closed forceps' tip or using its one prong only (figure 4). The same dissector was used to hold the stone and place in the glove finger, which was then attached with a clip to the parietal wall for removal at end of surgery (figure 4).

We intubated the ureter distally using a nasogastric tube, to eliminate obstruction distal to the stone and for guidance while suturing the ureter.



A 4-0 vicryl was used to close the ureterotomy with interrupted stitches and a tube drain was placed before closing the ports (figure 7). Operating time was 45 minutes. Urethral catheter was removed on first day and drain on second day. We did not insert double J stent because of no indication for this case.<sup>1,2,4,5</sup>

## DISCUSSION

Laparoscopic ureterolithotomy is a minimally invasive option to treat large ureteric stones not amenable to ureteroscopy. Transperitoneal approach gives better understanding of the anatomical landmarks particularly for the lower ureteric stone.

Port placement is the most crucial part of any laparoscopic surgery, more so for approaching lower ureteric stones located below the sacroiliac joint (SI). We used closed technique for placement of the camera port in our laparoscopic surgeries. It is easy to enter the abdomen at the umbilicus as only rectus sheath is encountered. The ureter is identified at the iliac vessels it should be crossed with vascular tape and then dissection should be carried out distally.

Stone localization is an important step of this surgery. In case, when the ureter is not so dilated, stone could be seen bulging in the ureter but in cases where stone is not seen prominently due to proximal dilatation of the ureter, it would sometimes become difficult to localize the stone visually. Pinching with the Maryland forceps helps in localizing the stone. Incision of the ureter over the stone with hook diathermy. It has been shown that using diathermy to make ureteral incision does not adversely affect ureteric tissue healing.<sup>2</sup>

Once the stone is fished out, it should be bagged. Unlike in retroperitoneal approach it is always better to bag the stone to avoid the risk of losing it in the peritoneal cavity. In large stones with presence of inflammation it is always better to place a double J stent that is put in before or during the laparoscopy to avoid the complication of urinary extravasation and urinoma formation. In this case, there was no indication for inserting double J stent.<sup>1,2,4,5</sup>

Abdominal access is fundamental for all laparoscopic procedures. However, a variety of complications are associated with placement of trocars, the Veress needle, or the Hasson cannula. In reports published between 1999 and 2001, the incidence of access complications was 0.4–2.0%. The complications consisted of intraoperative (hollow viscus injury, air embolus, preperitoneal insufflation) and postoperative complications (wound infection, abdominal wall hematoma).<sup>6</sup>

## CONCLUSION

Transperitoneal laparoscopic ureterolithotomy for distal ureteric stone is a safe and feasible technique that should be an option on every patients who plan to undergo distal ureterolithotomy especially for large stones.

## REFERENCES

1. Mandhani A, Kapoor R. Laparoscopic ureterolithotomy for lower ureteric stones: Steps to make it a simple procedure. *Indian J Urol.* 2009 Jan-Mar; 25(1): 140-2 [accessed 27 October 2013]. *Indian Journal of Urology.* <http://jjco.indianjournal.org>
2. Al-Sayyad A. Laparoscopic Transperitoneal Ureterolithotomy for large ureteric stones. *Urol Ann.* 2012 Jan-Apr; 4(1): 34-37. [accessed 25 October 2013]. *Urology Annals.* <http://urologyannals.org>
3. Lingeman JE, Matlaga BR, Evan PA. Surgical Management of Upper Urinary Tract Calculi. In: Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters AW, editor. *Campbell-Walsh Urology*, 9<sup>th</sup> ed. Philadelphia: Saunders Elsevier; 2007. p. 1375-9.
4. Hemal AK. Laparoscopic surgery for calculous disease: Technique and results. In Gill IS, editor. *Textbook of Laparoscopic Surgery*. New York: Informa healthcare; 2006. p. 279-86.
5. Kamble P. Evaluation of laparoscopic transperitoneal ureterolithotomy for large lower ureteric calculi. Bangalore: Rajiv Gandhi University of Health Sciences; 2012.
6. Gettman MT. Complications of laparoscopic access. In: Ramakumar S, Jarret T, editor. *Complications of Urologic Laparoscopic Surgery*. United States of America: Taylor and Francis group; 2005. p. 13-26.